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Full Translation of Japanese Patent Laid-open 07-111575

(54) [Title of the Invention]

COMMUNICATION CONTROL METHOD FOR FACSIMILE

5 DEVICES

(57) [Abstract] (Corrected)

[Configuration] When a transfer route is formed by four facsimile devices in sequence as shown in figure, for example, image information PA transferred by a first facsimile device FX1 to a facsimile device FX2 is transferred to facsimile devices FX3 and FX4 sequentially, and finally to the FX1 constituting the origin. In such a case, when the FX2 sends PA to the FX3, a circulation result report PB_a indicating the receipt of PA by the own terminal is prepared, and transmitted to the FX3 image as information following to PA. Similarly, the FX3 and the FX4 prepare and transmit result reports PB_b and PB_c, respectively. If there is present in the transfer route any terminal which has not received PA, the last facsimile device FX4 adds an unreception list PB' displaying the fact and transmits the unreception list PB' to the FX1.

[Effects] Each facsimile device forming the transfer route shares a communication cost for transmitting transfer image information to the next destination, and therefore all the facsimile devices bear a substantially equal communication cost. Therefore,

since reception confirmation information of the own terminal is added, the receipt of the image information by each device is precisely grasped.

5 [Scope of Claim for a Patent]

[Claim 1] A communication control method for facsimile devices,

wherein a circulation transfer function is provided for sequentially transferring the same image
10 information to a plurality of facsimile devices, and a facsimile device constituting an origin for starting the communication operation based on the circulation transfer function forms circulation destination information made up of destination
15 information of at least one other facsimile device forming the circulation route, calls a first destination facsimile device and transmits the circulation destination information and the transfer image information to the destination facsimile device,
20 and

the destination facsimile device included in the transfer route, upon receipt of the circulation destination information and the transfer image information from an upstream facsimile device in the
25 transfer route, records and outputs the image of the received transfer image information, adds the image information of the image indicating the confirmation

of the receipt of the image information by the own
terminal to the transfer image information to thereby
update the transfer image information, calls a new
transmission destination included in the circulation
5 destination information, and transmits the
circulation destination information and the updated
transfer image information as transfer image
information to the new transmission destination
facsimile device.

10

[Claim 2] A communication control method for
facsimile devices,

wherein a circulation transfer function is
provided for sequentially transferring the same image
15 information to a plurality of facsimile devices, and
a facsimile device constituting an origin for
starting the communication operation based on the
circulation transfer function forms circulation
destination information made up of destination
20 information of at least one other facsimile device
forming the circulation route, calls a first
destination facsimile device and transmits the
circulation destination information and the transfer
image information to the destination facsimile device,

25

each destination facsimile device except for
the last destination in the transfer route, upon
receipt of the circulation destination information

and the transfer image information from an upstream facsimile device in the transfer route, records and outputs the image of the received transfer image information, adds the image information of the image
5 indicating the confirmation of the receipt of the image information by the own terminal to the transfer image information to thereby update the transfer image information, calls a new transmission destination included in the circulation destination
10 information, and transmits the circulation destination information and the updated transfer image information as transfer image information to the new transmission destination facsimile device, and
15 the last destination facsimile device in the transfer route, upon receipt of the circulation destination information and the transfer image information from an upstream facsimile device in the transfer route, records and outputs the image of the
20 received transfer image information, adds the image information of the image indicating the confirmation of the receipt of the image information by the own terminal to the transfer image information to thereby update the transfer image information, calls the
25 origin facsimile device, and transmits the circulation destination information and the updated transfer image information as transfer image

information to the origin facsimile device.

[Detailed Description of the Invention]

[0001]

5 [Field of Industrial Application] The present invention relates to a communication control method for facsimile devices having a circulation transfer function of transferring the same image information sequentially to a plurality of facsimile devices.

10 [0002]

[Prior Art] In the conventional transfer function (relay function) of the facsimile devices, first, a transfer requesting station transmits the transfer image information to a transfer station with the transfer destination designated, and the transfer station transmits the received transfer image information to the designated transfer destination station. Also, if there are present a plurality of transfer destinations, the transfer requesting station designates a plurality of transfer destinations, and the transfer station sequentially broadcasts the received transfer image information to the plurality of the designated transfer destinations.

[0003]

25 [Problem to be solved by the Invention] The conventional system develops the following inconveniences.

[0004] Specifically, in a case where there are a plurality of transfer destinations, the transfer station transmits the transfer image information to all the transfer destinations. Therefore, the
5 communication cost of the transfer station becomes very great and in some cases, the communication cost of the entire system is increased inconveniently.

[0005] The present invention has been achieved in view of this actual situation, and the object thereof
10 is to provide a communication control method of facsimile devices for preventing the communication cost for executing the transfer function from concentrating at a single terminal and capable of reducing the communication cost of the entire system.

15 [0006]

[Means for Solving the Problem] According to the present invention, there is provided a communication control method for a facsimile device, wherein a circulation transfer function is provided for
20 sequentially transferring the same image information to a plurality of facsimile devices, and a facsimile device constituting an origin for starting the communication operation based on the circulation transfer function forms circulation destination
25 information made up of destination information of at least one other facsimile device forming the circulation route, calls a first destination

facsimile device and transmits the circulation destination information and the transfer image information to the destination facsimile device, and the destination facsimile device included in the

5 transfer route, upon receipt of the circulation destination information and the transfer image information from an upstream facsimile device in the transfer route, records and outputs the image of the received transfer image information, adds the image

10 information of the image indicating the confirmation of the receipt of the image information by the own terminal to the transfer image information update the transfer image information, calls a new transmission destination included in the circulation destination

15 information, and transmits the circulation destination information and the updated transfer image information as transfer image information to the new transmission destination facsimile device.

[0007] Also, according to the present invention,

20 there is provided a communication control method for a facsimile device wherein a circulation transfer function is provided for sequentially transferring the same image information to a plurality of facsimile devices, and a facsimile device

25 constituting an origin for starting the communication operation based on the circulation transfer function forms circulation destination information made up of

destination information of at least one other facsimile device forming the circulation route, calls a first destination facsimile device and transmits the circulation destination information and the

5 transfer image information to the destination facsimile device, each destination facsimile device except for the last destination in the transfer route, upon receipt of the circulation destination information and the transfer image information from

10 an upstream facsimile device in the transfer route, records and outputs the image of the received transfer image information, adds the image information of the image indicating the confirmation of the receipt of the image information by the own

15 terminal to the transfer image information to thereby update the transfer image information, calls a new transmission destination included in the circulation destination information, and transmits the circulation destination information and the updated

20 transfer image information as transfer image information to the new transmission destination facsimile device, and the last destination facsimile device in the transfer route, upon receipt of the circulation destination information and the transfer

25 image information from an upstream facsimile device in the transfer route, records and outputs the image of the received transfer image information, adds the

image information of the image indicating the confirmation of the receipt of the image information by the own terminal to the transfer image information to thereby update the transfer image information,
5 calls the origin facsimile device, and transmits the circulation destination information and the updated transfer image information as transfer image information to the origin facsimile device.

[0008]

10 [Operation] Therefore, each facsimile device forming the transfer route bears the communication cost for transmitting the transfer image information to the next destination, and therefore the facsimile devices share a substantially equal communication cost. Also,
15 each facsimile device adds the reception confirmation information of the own terminal and therefore the receipt of image information by each facsimile device in the transfer route can be positively grasped.

[0009]

20 [Embodiments] Embodiments of the present invention are described in detail below with reference to the accompanying drawings.

[0010] Fig. 1 shows a facsimile device according to an embodiment of the present invention. This
25 facsimile device has a group-3 facsimile device function.

[0011] In the drawing, a controller 1 executes the

process of controlling the various parts of the facsimile device and the facsimile transmission control process including the circulation transfer function (described later). A system memory 2 stores
5 a control processing program executed by the controller 1 and various pieces of data required for executing the processing program, while at the same time constituting a work area of the controller 1. A parameter memory 3 is for storing various pieces of
10 information unique to the group-3 facsimile device. [0012] A scanner 4 is for reading an original image with a predetermined resolution. A plotter 5 is for recording and outputting the image with a predetermined resolution. An operation display unit
15 6 is for operating this facsimile device and includes various operation keys and various display units. [0013] A codec 7 is for encoding the image signal by compression on the one hand and decoding the coded and compressed image information to the original
20 image signal on the other hand. An image accumulation unit 8 is for storing plural pieces of image information in coded and compressed state. [0014] A group-3 facsimile modem 9 is for implementing the modem function of the group-3
25 facsimile and has both the low-speed modem function (V.21 modem) for exchanging the transmission procedure signal and the high-speed modem function

(V.33 modem, V.29 modem, V.27 ter modem, and the like) for exchanging the image information mainly.

[0015] A network control device 10 is for connecting the facsimile device to a public telephone line
5 network and has an automatic transmit/receive function.

[0016] The controller 1, the system memory 2, the parameter memory 3, the scanner 4, the plotter 5, the operation display unit 6, the codec 7, the image
10 accumulator 8, the group-3 facsimile modem 9 and the network control device 10 are connected to a system bus 11 through which data are exchanged mainly between these elements.

[0017] Also, the data are exchanged directly between
15 the network control device 10 and the group-3 facsimile modem 9.

[0018] The circulation transfer function according to this embodiment is explained.

[0019] In this circulation transfer function, as
20 shown in Fig. 2, assume that four facsimile devices FX1, FX2, FX3, FX4 form a transfer route in this order. Image information PA transferred by the facsimile device FX1 to the facsimile device FX2 is sequentially transferred by the facsimile device FX2
25 to the facsimile device FX3, which in turn transfers the image information PA to the facsimile device FX4. Also, the last facsimile device FX4 in the transfer

route transfers the image information PA to the facsimile device FX1 being the origin of the transfer route.

[0020] Also, the facsimile device FX2, when
5 transmitting the image information PA to the facsimile device FX3, forms a circulation result report PB indicating the receipt of the image information PA by the own terminal, and transmits the circulation result report PB to the facsimile device
10 FX3 as the image information of the page next to the image information PA.

[0021] In similar manner, the facsimile device FX3, when transmitting the image information PA to the facsimile device FX4, forms a circulation result
15 report PBb by adding the image information displaying the receipt of the image information PA by the own terminal to the received circulation result report PBa, and transmits it to the facsimile device FX4 as the image information on the page next to the image
20 information PA.

[0022] The last facsimile device FX4, when transmitting the image information PA to the facsimile device FX1, forms a circulation result report PBc by adding the image information displaying
25 the receipt of the image information PA by the own terminal to the received circulation result report PBb, and transmits it to the facsimile device FX4 as

the image information on the page next to the image information PA. At the same time, if there is in the transfer route a terminal which has not received the image information PA, the facsimile device FX4

5 prepares an unreception list PB' displaying the fact and transmits the image information thereof to the facsimile device FX1 as the image information on the page next to the circulation result report PBc.

[0023] An example of the circulation result report PB
10 is shown in Fig. 3(a). Also, an example of the unreception list PB' is shown in Fig. 3(b).

[0024] Also, the facsimile device constituting the origin of the transfer route described above forms the circulation destination list information as shown
15 in Fig. 4(a).

[0025] This circulation destination list information shows the arrangement of the circulation destination information in a predetermined order for a plurality of facsimile devices constituting the transfer route,
20 and each circulation destination information includes header information and the telephone number of the facsimile device as shown in Fig. 4(b).

[0026] Also, the header information, as shown in Fig 4(c), consists of 8-bit data, of which the first bit
25 is set as a bit TP indicating that the circulation destination is an origin terminal. The second bit is set as a bit OT indicating that the circulation

destination is out when the circulation is transferred thereto. The third bit is set as a bit BS indicating that the circulation destination is busy when the circulation is transferred thereto.

- 5 The eighth bit is set as a bit RS indicating that no data is transmitted to the particular circulation destination. The bits 4, 5, 6, and 7 are not used.
- [0027] As described above, according to this embodiment, a plurality of facsimile devices have the
- 10 circulation transfer function of transferring the same image information sequentially, and therefore, when transmitting the same image information to a plurality of the facsimile devices, each facsimile device bears substantially the same communication
- 15 cost, thereby eliminating unfair distribution of the burden of the communication cost.

[0028] Also, in view of the fact that the reception result of each facsimile device is finally notified to the facsimile device constituting the origin of

20 the circulation transfer, the facsimile device constituting the origin is very conveniently informed of the process of executing the image information transfer designated by the own terminal.

[0029] Figs. 5 and 6 show an example of the

25 transmission process for starting the circulation transfer at the facsimile device constituting the origin of the circulation transfer.

[0030] First, upon selection of the circulation transfer function by a user, the user must input a list of one or more destinations constituting the transfer route (step 101) thereby forming the circulation destination list information as described above. In the initial state, the bit RS of the header information of the circulation destination information corresponding to each destination is set to 1, while bits BS and OT are both set to 0. Also, bit TP is set to 0 for the header information of the circulation destination information other than the own terminal, and 1 for the header information of the circulation destination information of the own terminal.

15 [0031] Next, one circulation destination information is selected from the circulation destination list information, in which the bit RS of the header information is set to 1 and both the bit BS and the bit OT are set to 0 (step 102).

20 [0032] The selected destination is called (step 103) to check whether the destination answers to the call or not (determination 104). When the result of the determination 104 is NO, the line is restored temporarily (step 105) to check whether a call can be made again or not (determination 106). When the result of the determination 106 is YES, a predetermined length of time is awaited (step 107).

25

after which the process is returned to step 103 to call the same destination again.

[0033] When the result of the determination 106 is NO, the destination currently selected is busy, and
5 therefore the bit BS of the header information of the particular destination is set to 1 (step 108). The next destination is selected from the circulation destination list information, in which the bit RS of the header information is set to 1, and both the bit
10 BS and the bit OT are set to 0 (step 109). Then the process is returned to step 103 to call the newly selected destination.

[0034] When the destination answers the call and the result of the determination 104 is YES, it is checked
15 whether a predetermined group-3 facsimile procedure signal could be received or not during the lapse of a predetermined time (NO in loop of determination 110, 111).

[0035] When the predetermined group-3 facsimile
20 procedure signal could not be received during the lapse of the predetermined time and the result of the determination 111 is YES, the destination is out at that time point and therefore the line is restored (step 112) and the bit OT for the header information
25 of the particular destination is set to 1 (step 113). Then, the process proceeds to step 109 to select the next destination.

[0036] When the predetermined group-3 facsimile procedure signal could be received during the lapse of the predetermined time and the result of the determination 110 is YES, on the other hand, a called station ID signal CED, a non-standard facilities signal NSF and a digital ID signal DIS are received from the counterpart terminal (step 114), and the transmission function (modem rate, and the like) used for the current image information transmission is set (step 115). Then, a non-standard set-up signal NSS (circulation transfer) including at least the information designating the currently set transmission function, the information indicating the use of the circulation transfer function for the particular image information transmission and the circulation destination list information are sent out (step 116). A predetermined modem training process is executed at the currently designated modem rate (step 117), and the currently used modem rate is determined.

[0037] Once the preparation for image information transmission is complete in this way, the image information of one page is transmitted (step 118), and upon complete transmission, it is checked whether the page to be transmitted next exists or not (determination 119). When the result of the determination 119 is YES, a multi-page signal MPS is

sent out as a post-message signal (step 120), the answer signal from the counterpart terminal is received (step 121), and the process is returned to step 118 to transmit the image information of the next page.

[0038] When the result of the determination 119 is NO upon complete transmission of all the pages, on the other hand, an end of procedure signal EOP is sent out as a post-message signal (step 122), the answer signal is received from the counterpart terminal (step 123), a disconnect signal DCN is sent out (step 124) and the line is restored (step 125) thereby ending the series of transmission operation for starting the circulation transfer.

[0039] Figs. 7(a) and (b) and Fig. 8 show examples of the process for detection of an incoming call.

[0040] Upon detection of an incoming call (step 201), first, the incoming call is answered (step 202).

Then, the predetermined called station ID signal CED, the non-standard facilities signal NSF and the digital ID signal DIS are sent out (step 203), and an instruction signal is received from the counterpart terminal (step 204).

[0041] At the same time, it is checked whether the circulation transfer function has been designated or not (determination 205). When the result of the determination 205 is NO, the normal reception process

is executed. When the result of the determination 205 is YES, on the other hand, the transmission function currently notified is set in each part of the system (step 206), a predetermined modem training process is executed at the currently set modem rate (step 207), and the current modem rate is determined. [0042] Next, the image information of one page is received and is accumulated in the image accumulator 8 (step 208), and a post-message signal is received (step 209). It is then checked whether the post-message signal currently received is the end of procedure signal EOP or not (determination 210). When the result of the determination 209 is NO, it indicates the presence of the next page, and therefore an answer signal indicating the result of receiving the currently received page is sent out (step 211). Then, the process returns to step 208 to receive the image information of the next page. [0043] When the end of procedure signal EOP is received as a post-message signal and the result of the determination 210 is YES, on the other hand, the answer signal indicating the result of receiving the currently received page is sent out (step 212), the disconnect signal DCN is received (step 213) and the line is restored (step 214).

[0044] Upon complete receipt of the transfer image information in this way, the circulation destination

information of the own terminal contained in the circulation destination list currently received is extracted, the bit RS of the header information thereof is set to 0 and the circulation destination
5 list information is updated (step 215). The original to be recorded of the image information currently received is recorded and output from the plotter 5 (step 216).

[0045] Next, it is checked whether the automatic
10 transfer is set or not for circulation transfer as the setting information for the own terminal (determination 217). When the result of the determination 217 is NO, a circulation transfer receipt guidance message is displayed and output on
15 the operation display unit 6 (step 218), while the receipt confirmation operation and the input operation by the user is awaited until the lapse of a predetermined time (NO in loop of determinations 219 and 220).

20 [0046] When the user performs the receipt confirmation operation and the input operation before the lapse of the predetermined time and the result of the determination 219 is YES, or when the user fails to perform the receipt confirmation operation and the
25 input operation before the lapse of the predetermined time and the result of the determination 220 is YES, and when the automatic transfer is set and the result

of the determination 217 is YES, then the operation for circulation transfer is started.

[0047] Specifically, first, the contents of the current circulation destination list information are
5 checked to determine whether the own terminal is the first destination or not (determination 221). In this case, for example, assuming that the bit RS of the header information of all the circulation destination information other than the own terminal
10 is 1, it can be determined that the own terminal is the first destination.

[0048] When the result of the determination 221 is YES, the image of the circulation result report PB is formed which includes the contents indicating the
15 items of the circulation result report PB and in which the display image of the telephone number of the own terminal is set in the column "transmitter" and the "O" display image is set in the column "confirmation" (step 222), this image is
20 compressed by being encoded in the codec 7 (step 223), the image information obtained thereby is accumulated in the image accumulator 8 as the image of the last page of the current transfer image information (step 224), and a predetermined circulation transfer
25 process is started (step 225).

[0049] When the result of the determination 221 is NO, on the other hand, the image information of the last

page (page of the circulation result report PB) of the circulation image information currently received is decoded in the codec 7, and the image of the circulation result report PB is formed (step 226).

5 [0050] Then, the confirmation information is formed to display the display image of the telephone number of the own terminal in the column "transmitter", and the "O" display image in the column "confirmation" (step 227), the confirmation information thus formed
10 is arranged in the leading portion of the blank formed in the rear end portion of the significant image of all the images of the circulation result report PB thereby updating the image of the circulation result report PB (step 228), the image of
15 the circulation result report PB obtained by update is compressed by encoding in the codec 7 (step 229), the image information obtained thereby is accumulated in the image accumulator 8 as the image of the last page of the current transfer image information (step
20 230), and the process proceeds to step 225 to start a predetermined circulation transfer process.

[0051] Figs. 9, 10, 11 and 12 show an example of the circulation transfer process.

[0052] First, from the circulation destination list
25 information, one circulation destination information is selected in which the bit RS of the header information is set to 1, the bit BS is set to 0, and

the bit OT is set to 0 (step 301).

[0053] It is then checked whether the bit TP of the header information of the circulation destination information currently selected is set to 1 and the
5 origin terminal is selected as the destination or not (determination 302).

[0054] When the result of the determination 302 is YES, it indicates that the own terminal is the last transfer destination, and therefore, based on the
10 current contents of the circulation destination list information, the unreception list PB' described above is prepared (step 303), the display image of the particular unreception list PB' is formed (step 304), the image thereof is compressed by encoding in the
15 codec 7 (step 305), and the image information obtained thereby is accumulated in the image accumulator 8 as the image of the last page of the current transfer image information (step 306).

[0055] After updating the transfer image information
20 in this way, the current destination is called (step 307) to check whether the destination answers the call or not (determination 308). When the result of the determination 308 is NO, the line is restored temporarily and after waiting for a predetermined
25 time (step 309), the process is returned to step 103 to call the same destination again.

[0056] When the result of the determination 308 is

YES, on the other hand, the called station ID signal CED, the non-standard facilities signal NSF and the digital ID signal DIS are received from the counterpart terminal (step 310), the transmission
5 function used for the current image information transmission (modem rate, and the like) is set (step 311), the non-standard set-up signal NSS including at least the information designating the transmission function currently set is sent out (step 312), a
10 predetermined modem training process is executed at the currently designated modem rate (step 313), and the modem rate used currently is determined.

[0057] Once the preparation for transmission of the image information is completed in this way, the image
15 information of one page is transmitted (step 314), and at the end of this transmission, it is checked whether the next page exists or not (determination 315). When the result of the determination 315 is YES, the multi-page signal MPS is sent out as a post-
20 message signal (step 316), an answer signal is received from the counterpart terminal (step 317) and the process is returned to step 314 to transmit the image information of the next page.

[0058] When the result of the determination 315 is NO
25 upon complete transmission of all the pages, the end of procedure signal EOP is sent out as a post-message signal (step 318), the answer signal is received from

the counterpart terminal (step 319), the cut-off instruction signal DCN is sent out (step 320), and the line is restored (step 321) thereby ending the series of the transmission operation for circulation
5 transfer.

[0059] When the destination currently selected is not the origin terminal and the result of the determination 302 is NO, the selected destination is called (step 322) to check whether the destination
10 answers the call or not (determination 323). When the result of the determination 323 is NO, the line is restored temporarily (step 324) to check whether a call can be made again or not (determination 325). When the result of the determination 325 is YES, a
15 predetermined time is awaited (step 326), and the process is returned to step 322 to call the same destination again.

[0060] When the result of the determination 325 is NO, on the other hand, the destination currently selected
20 is busy, and therefore the bit BS of the header information of the particular destination is set to 1 (step 327). Then, the process is returned to step 301, the next destination is searched for and the transmission process is executed for the particular
25 destination.

[0061] When the destination answers the call and the result of the determination 323 is YES, it is checked

whether a predetermined group-3 facsimile procedure signal could be received during the lapse of a predetermined time (NO in loop of determinations 328 and 329).

5 [0062] When the predetermined group-3 facsimile procedure signal could not be received during the lapse of the predetermined time and the result of the determination 329 is YES, then the particular destination is "out". Therefore, the line is
10 restored (step 330), and the bit OT of the header information of the particular destination is set to 1 (step 331). Then, the process proceeds to step 301 to select the next destination.

[0063] When the predetermined group-3 facsimile
15 procedure signal could be received during the lapse of the predetermined time and the result of the determination 328 is YES, then the called station ID signal CED, the non-standard facilities signal NSF, and the digital ID signal DIS are received from the
20 counterpart terminal (step 332), and the transmission function (modem rate, and the like) used for the current image information transmission is set (step 333). Then, the non-standard set-up signal NSS (circulation transfer), including at least the
25 information designating the currently set transmission function, the information indicating that the current image information transmission uses

the circulation transfer function and the circulation destination list information, is sent out (step 334), and a predetermined modem training process is executed at the currently designated modem rate (step 5 335) to determine the modem rate used currently.

[0064] Once the preparation for transmission of the image information is complete in this way, the image information of one page is transmitted (step 336), and upon complete transmission thereof, it is checked 10 whether the next page exists or not (determination 337). When the result of the determination 337 is YES, the multi-page signal MPS is sent out as a post-message signal (step 338), the answer signal from the counterpart terminal is received (step 339), and the 15 process is returned to step 336 to transmit the image information of the next page.

[0065] When the result of the determination 337 is NO upon complete transmission of all the pages, the process proceeds to step 318 and the predetermined 20 transmission end process is executed to end the series of the transmission operation for the circulation transfer.

[0066] In the embodiments described above, the telephone number is displayed as the specifics of the 25 transmitter indicated in the circulation result report and the specifics of the non-receivers indicated on the unreception list. As an alternative,

an abbreviation, a nick name, and the like of the terminal may be displayed.

[0067] Also, in the embodiments described above, the invention is applied to the group-3 facsimile device.

5 However, the present invention is similarly applicable to a group-4 facsimile device with equal effect.

[0068]

[Effects of the Invention] As described above,
10 according to the present invention, the burden of the communication cost to transmit the transfer image information to the next destination is shared by each facsimile device forming a transfer route, and therefore substantially the same burden of the
15 communication cost is imposed on each facsimile device. Also, each facsimile device has added thereto the reception confirmation information of the own terminal, and therefore the receipt of the image information by each facsimile device on the transfer
20 route can be positively grasped.

[Brief Description of Drawings]

[Fig. 1] A block diagram illustrating a group-3 facsimile device according to an embodiment of the invention.

25 [Fig. 2] A schematic diagram for explaining a circulation transfer function.

[Fig. 3] A schematic diagram showing an example of a

circulation result report and an unreception list.

[Fig. 4] A schematic diagram showing an example of circulation destination list information.

[Fig. 5] A flowchart showing a part of an example of
5 the process for transmission operation at the time of starting the circulation transfer.

[Fig. 6] A flowchart showing another part of an example of the process for transmission operation at the time of starting the circulation transfer.

10 [Fig. 7] A flowchart showing a part of an example of the process for detection of an incoming call.

[Fig. 8] A flowchart showing another part of an example of the process for detection of an incoming call.

15 [Fig. 9] A flowchart showing a part of an example of the process for transmission operation at the time of circulation transfer.

[Fig. 10] A flowchart showing another part of an example of the process for transmission operation at
20 the time of circulation transfer.

[Fig. 11] A flowchart showing still another part of an example of the process for transmission operation at the time of circulation transfer.

[Fig. 12] A flowchart showing yet another part of an
25 example of the process for transmission operation at the time of circulation transfer.

[Fig. 1]

- 1 Controller
- 2 System memory
- 3 Parameter memory
- 5 4 Scanner
- 5 Plotter
- 6 Operation display unit
- 7 Codec
- 8 Image accumulator
- 10 9 G3 Fax modem
- 10 Network control device

[Fig. 2]

FX1 to FX4 Facsimile devices

15

[Fig. 3]

- (a) Circulation result report
 - Transmitter
 - Confirmation
 - 20 Telephone No. #1
 - Telephone No. #2
- (b) Unreception list
 - Non-receiver
 - Reason
 - 25 Telephone No. #(k)
 - Busy
 - Telephone No. #(k+1)

Out

[Fig. 4]

- (a) Circulation destination information #1
- 5 Circulation destination information #2
- Circulation destination information #n
- (b) Header information
- Telephone number

10 [Fig. 5]

- Start
- 101 Input circulation destination list
- 102 Select destination
- 103 Call selected destination
- 15 104 Answer to call?
- 105 Release line
- 106 Repeated call OK?
- 107 Wait
- 108 Set "busy" mark
- 20 109 Select next destination
- 110 Procedure signal detected?
- 112 Release line
- 113 Set "out" mark
- 114 Receive CED, NSF, DIS
- 25 115 Set transmission function

[Fig. 6]

116 Send out NSS (circulation transfer)
117 Modem training process
118 Transmit 1P of image information
119 Next P?
5 120 Send out MPS
121 Receive answer
122 Send out EOP
123 Receive answer
124 Send out DCN
10 125 Release line
End

[Fig. 7]

Start
15 201 Detect incoming call
202 Answer call
203 Send CED, NSF, DIS
204 Receive instruction
205 Circulation transfer?
20 (To normal process)
206 Set transmission function
207 Modem training process
208 Receive and accumulate 1P of image information
209 Receive instruction
25 211 Send answer
212 Send answer
213 Receive DCN

214 Restore line
215 Update circulation destination information
216 Record and output received image

5 [Fig. 8]
217 Automatic transfer?
218 Display circulation transfer receipt GM
219 User confirmation?
221 First destination?

10 222 Prepare confirmation information with item
indication
223 Code and compress
224 Accumulate as last P of transfer image
information

15 225 Start circulation transfer
226 Decode last P of transfer image information
227 Prepare confirmation information
228 Add confirmation information to last blank of
last P

20 229 Code and compress
230 Accumulate as last P of transfer image
information
End

25 [Fig. 9]
Start
301 Select destination

302 Origin terminal?
303 Prepare non-transmitter terminal list
304 Convert to image
305 Code and compress
5 306 Accumulate as last P of transfer image
 information
 307 Call
 308 Answer?
 309 Restore line and wait
10 310 Receive CED, NSF, DIS
 311 Set transmission function
 312 Send NSS
 313 Modem training procedure

15 [Fig. 10]
 314 Transmit 1P of image information
 315 Next P?
 316 Send MPS
 317 Receive answer
20 318 Send EOP
 319 Receive answer
 320 Send DCN
 321 Release line
 End

25 [Fig. 11]
 322 Call

323 Answer?
324 Release line
325 Repeated call OK?
326 Wait
5 327 Set "busy" mark
328 Procedure signal detected?
330 Release line
331 Set "out" mark
332 Receive CED, NSF, DIS
10 333 Set transmission function

[Fig. 12]

334 Send out NSS (circulation transfer)
335 Modem training process
15 336 Transmit 1P of image information
337 Next P?
338 Send out MPS
339 Receive answer

*** RX REPORT ***

RECEPTION OK

TX/RX NO	9204	
CONNECTION TEL		0332140929
CONNECTION ID		
ST. TIME	08/30 00:16	
USAGE T	09'35	
PGS.	37	
RESULT	OK	